

WHAT IS CLAIMED IS:

1. A particle producing method comprising:
introducing a carrier gas into a reaction container;
5 heating an inside of the reaction container; and
introducing a source gas and a reaction inhibitor
generating gas into the reaction container.
2. The particle producing method according to claim
10 1, wherein:
the source gas produces particles in the reaction
container by a thermal decomposition reaction; and
the reaction inhibitor generating gas produces a
inhibition component, which inhibits the thermal decomposition
15 reaction with the particles used as a catalyst.
3. The particle producing method according to claim
1, wherein the reaction inhibitor generating gas includes
hydrogen and carbon dioxide.
- 20 4. The particle producing method according to claim
1, wherein diameters of the particles are controlled in
accordance with an amount of the reaction inhibitor generating
gas introduced into the reaction container.

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5. The particle producing method according to claim 1, wherein the source gas includes $\text{Fe}(\text{CO})_5$.

6. The particle producing method according to claim 5 1, wherein the source gas includes $\text{Co}_2(\text{CO})_8$.

7. The particle producing method according to claim 1, wherein the source gas includes $\text{Ni}(\text{CO})_4$.

10 8. The particle producing method according to claim 1, wherein the carrier gas includes nitrogen.

9. The particle producing method according to claim 1, wherein the carrier gas is an inert gas.

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10. The particle producing method according to claim 1, further comprising:

determining ratio of the source gas to the reaction inhibitor generating gas in a flow rate to control an average
20 diameter of the particles.

11. The particle producing method according to claim 1, wherein the reaction container is heated at a center part thereof in a carrier gas flowing direction.

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12. A particle producing method comprising:
pyrolyzing a source gas to produce particles; and
producing an inhibition component, which inhibits the
pyrolyzing, from a reaction inhibitor generating gas with the
5 produced particles used as a catalyst.

13. The particle producing method according to claim
12, wherein the reaction inhibitor generating gas includes
hydrogen and carbon dioxide.

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14. The particle producing method according to claim
12, wherein the source gas includes $\text{Fe}(\text{CO})_5$.

15. The particle producing method according to claim
15 12, wherein the source gas includes $\text{Co}_2(\text{CO})_8$.

16. The particle producing method according to claim
12, wherein the source gas includes $\text{Ni}(\text{CO})_4$.

20 17. The particle producing method according to claim
12, further comprising:

determining ratio of the source gas to the reaction
inhibitor generating gas in a flow rate to control an average
diameter of the particles.

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18. A particle producing apparatus comprising:

a reaction container;

an introduction portion provided at one end of the reaction container, the introduction portion through which a source gas,

5 a reaction inhibitor generating gas, and a carrier gas are introduced into the reaction container;

a heater provided on an outer wall of the reaction container;

an exhaust portion configured to exhaust the carrier gas
10 and produced particles from the other end of the reaction container;

a cooler configured to cool the produced particles exhausted from the exhaust portion; and

a storage portion configured to store the produced
15 particles from the cooler.

19. The particle producing apparatus according to claim 18, wherein the reaction inhibitor generating gas includes hydrogen and carbon dioxide.

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